

## Research Article

# Profile of dog bite cases attending the outpatient department of an urban health training centre in Bangalore city, India

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## ABSTRACT

**Background:** Human rabies, a viral zoonotic disease, primarily involving the central nervous system is transmitted by the bites or licks of canines especially dogs. It almost always culminates in death demanding prompt intervention in the form of vaccines and immunoglobulins. Despite availability of such preventive measures, compliance at times is not satisfactory. This study was conducted to know the profile of dog bite cases and estimate the compliance of the same attending the outpatient department (OPD) in an Urban Health Training Center (UHTC) in the field practice area of Bangalore Medical College and Research Institute (BMCRI).

**Methods:** It is a retrospective record based study conducted from April 2013 to March 2014 in the UHTC in the field practice area of BMCRI, among all the dog bites cases who attended the OPD.

**Results:** Of the total 637 cases, 461(72.4%) were males and 176 (27.6%) were females. Most of the cases 192 (30.14%) were less than 15 years of age. Of the 637 cases, 119 were of category 1 bites and the remaining 518 which included 132 category 2 cases and 386 category 3 cases actually required vaccination. A total of 218 cases had taken all the 4 doses of intradermal vaccination and the remaining 351 were only partially immunized with 138 cases receiving the 1<sup>st</sup> dose, 87 the 2<sup>nd</sup> and 126 the 3<sup>rd</sup> dose.

**Conclusions:** Men are more affected as they are more out in the open to earn a livelihood for their family.

**Keywords:** Dog bite, Rabies, Vaccination, Awareness

## INTRODUCTION

Human rabies, a viral zoonotic disease, primarily involving the central nervous system is transmitted by the bite or scratches of canines especially dogs.<sup>1</sup> It occurs in more than 150 countries and territories and is present in all continents except Antarctica. More than 95% of the deaths occur in Asia and Africa alone.<sup>2</sup> In 2003, it was estimated that 14,000 to 17,000 human deaths were caused by rabies in India.<sup>3</sup> In more than 99% of human rabies cases, the virus is transmitted by domestic dogs.<sup>4</sup> out of 10 cases, are children less than 15 years. It grossly lacks spectral severity and almost always culminates in death, demanding prompt intervention in the form of

vaccines and immunoglobulin's. Every year, more than 15 million people worldwide receive post-bite vaccination to prevent the disease; this is estimated to prevent hundreds of thousands of rabies deaths annually.<sup>2</sup> The regimen adapted in this institution is the 2-site intradermal regimen (Updated Thai Red Cross regimen), which prescribes 0.1 ml of ARV at 2 sites (deltoid or thigh) on days 0,3,7,28.<sup>4</sup>

Despite availability of such preventive measures compliance of the patients is at question due to ignorance, lack of transportation and adverse effects following immunization (AEFI) to name a few.

This study was conducted to assess the compliance of dog bite cases attending the outpatient department of a tertiary care center in Bangalore city.

Objectives of the study was profile of dog bite cases attending OPD of the UHTC in the field practice area of Bangalore Medical College and Research Institute (BMCRI), Bangalore and to estimate the compliance of Anti-Rabies vaccination among the study population.

## METHODS

**Study design:** Retrospective record based study.

**Study area:** An UHTC in the field practice area of BMCRI, Bangalore.

**Study population:** All the dog bite cases who attended the OPD in the UHTC in the field practice area of BMCRI, Bangalore.

**Sample size:** n = 637

**Sampling method:** Universal sampling.

**Study duration:** April 2013 to March 2014

### Inclusion criteria

All the dog bite cases registered during the study period.

### Exclusion criteria

All other animal bite cases which are not part of the inclusion criteria.

### Statistical analysis

The data was collected and compiled in MS Excel and analyzed by using Statistical Package for Social Sciences (SPSS) software version 20.0. Descriptive statistics was used as necessary, all qualitative variables were presented as frequency and percentages. All quantitative variables were presented as mean and standard deviation. Chi square test of significance was applied.

### Full immunization

A dog bite case who received 4 doses of ARV

### Partial immunization

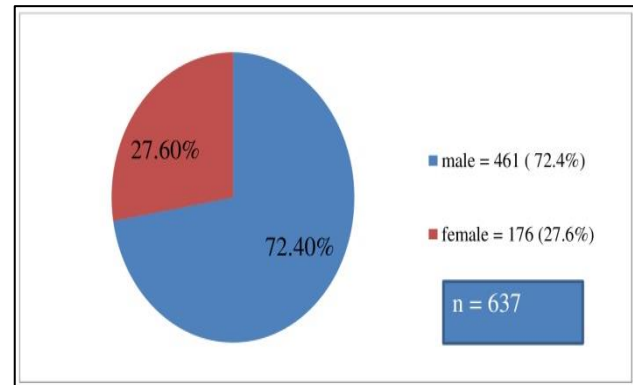
A dog bite case who missed any one or more of the 4 doses

### No immunization

Dog bite cases who did not receive even a single dose of vaccine.

## RESULTS

Figure 1 shows that the total number of dog bite cases that attended the OPD of UHTC under BMCRI during the study period was 637 (n=637), of which a majority of them 461(72.4%) were males and 176 (27.6%) were females.



**Figure 1: Gender ratio among dog bite cases.**

Most of the cases 192 (30.14%) were found to be in the age group 0-15 and males were the predominant victims in all the 5 age groups as per table-1. Minimal age was found to be 1 year and the maximal was 88. The age group with maximal number of cases among children were around 10 years with 25 (3.9%) cases and 40 years among adult with 25 (3.9%) cases.

**Table 1: Age and sex distribution among dog bite cases.**

Age group	Male	Female	Numbers	Percentage (%)
0-15	131 (20.6%)	61 (9.6%)	192	30.14
16-30	140 (22%)	45 (7.1%)	185	29.04
31-45	114 (17.9%)	37 (5.8%)	151	23.70
46-60	44 (6.9%)	30 (4.7%)	74	11.62
>60	32 (5%)	3 (0.4%)	35	5.50
<b>Total</b>	<b>461 (72.4%)</b>	<b>176 (27.6%)</b>	<b>637</b>	<b>100</b>

Table 2 reveals that the protected and unprotected pets contributed to 140 and 85 cases respectively and stray dogs alone contributed to about 412 cases. Majority of the cases (386) were category 3 according to WHO classification. It was found that of the 637 cases, 119 cases were of category 1 type which did not require any vaccination as such. So the remaining 518 cases which included 132 category 2 cases and 386 category 3 cases actually required treatment with vaccines and immunoglobulins, wherever indicated. All the 3 categories of bites namely category-1 (60), category-2 (76), and category-3 (276) were found to be caused more by stray dogs followed by protected and unprotected pets in that order.

Table 3 reveals that 68 cases were found to be referred to higher centers or private hospitals for further management and only 569 cases which comprised of 417 males and 152 females had actually received treatment in the urban health center. A total of 218 cases which includes 156 males and 62 females were fully immunized as they had completed the prescribed 4 doses of intradermal vaccination as per the recommended schedule. The remaining 351 defaulters were only

partially immunized with 138 cases receiving the 1<sup>st</sup> dose, 87 the 2<sup>nd</sup> and 126 the 3<sup>rd</sup> dose. The compliance level towards ARV schedule was found to be high among males, but difference between them was not statistically significant  $X^2 = 0.109$ ,  $df = 1$ ,  $p > 0.05$ . The table also reveals that, all the registered and treated dog bite cases had received at least one dose of vaccine and hence no cases of non-immunization was seen.

**Table 2: Cross tabulation of category of bite with type of dog.**

Category of bite*	Type of dog**			Total
	1	2	3	
1	43 (6.8%)	16 (2.5%)	60(9.4%)	119(18.7%)
2	30 (4.7%)	26 (4.1%)	76(12%)	132(20.7%)
3	67 (10.5%)	43 (6.7%)	276(43.3%)	386(60.6%)
Total	140 (22%)	85(13.3%)	412(64.7%)	637(100%)

\*Category of bite: 1-Lick/touch on intact skin; 2-Nibbling on uncovered skin /abrasions/scratches on intact skin without bleeding; 3-Transdermal bite/scratch and licks on broken skin/ contamination of mucous membranes with saliva from licks, \*\*Type of dog: 1-Protected pet; 2-Unprotected pet ; 3-Stray dog.

**Table 3: Post exposure ARV (intradermal) prophylaxis in study population.**

Sex	Doses of ARV				Referred	Total
	1 <sup>st</sup> dose	2 <sup>nd</sup> dose	3 <sup>rd</sup> dose	4 <sup>th</sup> dose		
Male	106(16.6%)	64(10%)	91(14.3%)	156(24.5%)	44	461(72.4%)
Female	32(5%)	23(3.6%)	35((5.5%)	62(9.7%)	24	176(27.6%)
Total	138(21.6%)	87(13.6%)	126(19.8%)	218(34%)	68	637

$X^2 = 0.109$ ,  $df = 1$ ,  $p > 0.05$ .

**Table 4: Antirabies serum given in study population.**

Total population	637
Category 3 bites	386 (60.6%)
Anti-Rabies serum administered	386 (60.6%)

Table 4 shows that a total of 386 cases were category 3 bites and all 386 of them had received rabies immunoglobulin along with the routine post exposure vaccination as per WHO recommendations. This reveals that no refusals on grounds of fear of adverse effects or the actual occurrence of adverse effects, has taken place to abstain from the administration of the immunoglobulins. So this ensures conferring both active and passive immunity to combat the onslaught of the virus.

## DISCUSSION

The data of dog bite cases pertaining to the gender and age group conforms to the global scenario with a clear cut male predominance and a majority of the victims under the age of 15.<sup>1</sup> Nearly 85 cases of bites were by unprotected pet dogs, which reveal the high degree of ignorance regarding vaccination of domesticated dogs.

Nearly 412 (64%) of the cases were caused by stray dogs indicative of the high risk of exposure of humans to dog menace out in the streets. Dog vaccination will drive down not only the deaths attributable to rabies but also the need for PEP as a part of dog bite patient care.<sup>1</sup>

Another modality of controlling human rabies, is dog population management (DPM). The inhumane catch and kill method was substituted by the animal birth control (ABC) programme which was launched along with the immunization programme in the Corporation of Chennai in the year 1996.

ABC is a female focused programme which concentrates on spaying bitches rather than castrating males as it is considered to be more cost effective.<sup>5</sup> Majority of the patients were of category 3 according to WHO classification. This was contrary to the findings by Tiwari et al and Modi both of which stated that the majority were of category 2.<sup>6,7</sup>

In the present study the compliance level towards ARV schedule was high among males, but difference between them was not statistically significant. On the contrary, in a study by Rohi KR and Mankeshwar R compliance was

seen more in female patients (68.7%) as compared to male patients (64.7%).<sup>8</sup>

## CONCLUSION

Men are more affected as they are more out in the open to earn a livelihood for their family.

Awareness has to be created amongst vaccinees about the completion of the course, failing which the regimen would lose its efficacy.

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